

December 10, 1990

Highest Highs and Lowest Lows

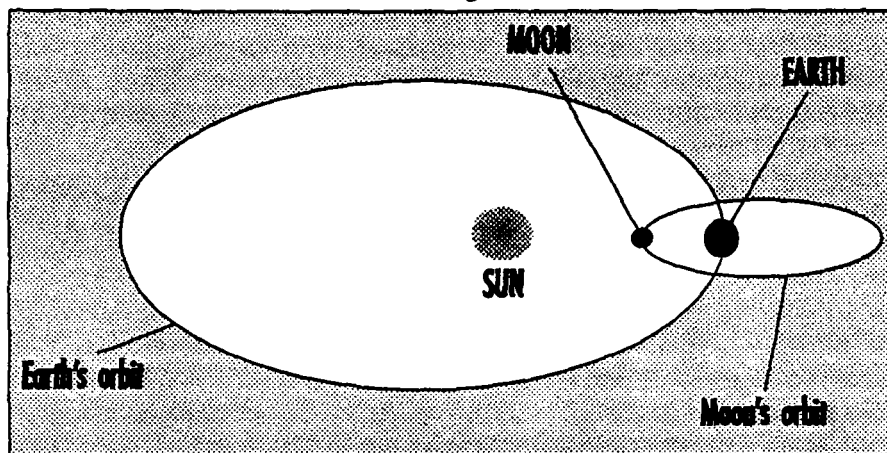
Congruence of Sun, Moon and Earth May Affect Tides

An unusual alignment of the sun, moon and earth added to the severity of several coastal storms last week, and a similar alignment threatens to do the same at the end of the year.

High tides will be slightly higher than normal and low tides will be slightly lower than normal from December 30 through January 2 because of these events, which all influence the tides directly. During the events' first occurrence this year, from December 1 through December 4, some coastal locations broke tidal records, recording both the highest high tide and lowest low tide.

Flooding Possible

Luckily, no major storm occurred during that time in the affected areas. The alignment's effect would heighten the force of coastal storms, and might cause local flooding. Extremely low tides may



How the Heavens Affect the Tides: In this diagram, the sun, earth and moon are in their present positions. The moon is between the sun and earth, causing *syzygy*—a full moon. It's also at its *perigee*, the closest point in its elliptical orbit around the earth. Meanwhile, the earth is at its closest point to the sun, its *perihelion*. To find out what these and other terms mean, see the story below.

expose mariners to unexpected obstructions to navigation and other low-water hazards.

These five tide-producing normal astronomic events are *syzygy*, *perigee*, *tropic tides*, *winter solstice* and *perihelion*. (For definitions, and how these phenomena work together to cause high and low tides, see

the story below.)

While no forecasts are yet available for the end of the year, NOAA is asking people who live or work in coastal areas subject to flooding to stay alert and listen to NOAA Weather Radio reports and warnings. ☉

What's a Syzygy?: Tidal Terms Explained

NOAA tide predictions are based on normal motions of the sun, moon and earth, but their scientific names can be confusing. Here's a short glossary of what these terms mean, and how they affected and will affect the tides.

Syzygy: The full moon. On December 2, the moon was on the opposite side of the earth

from the sun during its monthly revolution around the earth. This increases the total tidal pull of the sun and moon.

Tropic Tides: On December 3 and again on December 30, the moon will be at its maximum northern point above the celestial equator during its monthly cycle, causing high and low tides called *tropic*

Coming Events

- Third National Conference of Applied Marine Research, in San Diego, Cal., Jan. 4-6, 1991.
- Working Group for Cooperative Support and Backup, in Camp Springs, Md., Jan. 23-24, 1991.

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Shrimpers Stop Using TEDs Early: The requirement for use of Turtle Excluder Devices (TEDs) in the Gulf of Mexico expired on November 30, but many shrimpers in the northern Gulf may have jumped the gun. Twelve of the 13 vessels boarded by the Coast Guard between November 21 and 27 were not using TEDs, and were in violation of the law. Observed TED compliance in the Gulf for 1990 was 70 percent. TED use becomes mandatory again on March 1, 1991.

NOAA-Funded Research Opens Crayfish Export Market to Sweden: Tons of crayfish now make the journey from a central Minnesota lake to boiling pots in Sweden, thanks to Minnesota Sea Grant Extension work funded by NOAA. No major market existed for Minnesota's wild crayfish harvest until Europe's native crayfish were devastated by a disease imported, ironically, from America. Working with researchers, entrepre-

neurs, trappers, farmers and overseas customers, Minnesota Sea Grant fisheries agents helped to develop a crayfish export industry that will process and ship 17 tons of Minnesota crayfish to Sweden this year.

Revise Your Charts: Rear Admiral J. Austin Yeager of the NOAA Corps took over as director of Charting and Geodetic Services late last month.

over the Rocky Mountain states, slightly west of its previous location, over the central U.S.

Big Rise in Great Falls: The NOAA Weather Service Forecast Office (WSFO) in Great Falls, Mont., might not be the largest, but it didn't stop NOAA staffers there from staffing a booth and display on Winter Storm Safety at the largest shopping mall in Montana, Great Falls's Holiday

Village Mall. A fully inflated weather balloon on display attracted considerable attention and even garnered the return of a weather balloon launched more than a year ago. The display also allowed the WSFO staff to provide information to passers-by about the hazards of winter weather and to obtain comments on forecast and weather services in the Great Falls area. ☺

NOAA NOTES

He relieved Rear Admiral Wesley V. Hull.

GOES Goes West: NOAA's Geostationary Operational Environmental Satellite (GOES-7) arrived at 108 degrees west longitude last week, to enable it to view strong offshore winter storms 690 miles further westward into the Pacific than its location during the hurricane season, 98 degrees west, would allow. The satellite is drifting towards its new location slowly to conserve fuel and prolong the satellite's life. The new location hovers

What the Terms Mean

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tides. (The celestial equator is similar to the earth's equator, and lies on the same plane, but encircles the solar system.)

Perigee: When the moon is closer to the earth than at any other time during its monthly cycle. This increases its gravitational pull on the tides, and will occur on December 2 and December 31.

Winter Solstice: When the sun reaches its maximum southern point below the celestial equator during the year. This will occur on December 22.

Perihelion: When the earth will be closer to the sun than at any other time in its yearly orbit around the sun. This increases the sun's gravitational pull on the tides, and will occur on January 2. ☺

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National Oceanic and Atmospheric Administration

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